IN THE CLAIMS

The current status of the claims is reflected in the below listing of claims.

1. (Previously Presented) A pesticidal material comprising a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

2. (Original) A pesticidal material according to claim 1 wherein neither the primary amine nor the auxiliary amine is a hydrolysis product of the polyisocyanate.

3. (Original) The pesticidal material as set forth in claim 1 wherein said other monomers comprise the principal amine and the auxiliary amine in a ratio effective to provide a predetermined permeability of the shell.

4. (Original) The pesticidal material as set forth in claim 1 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to produce a shell of greater permeability than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

5. (Original) The pesticidal material as set forth in claim 1 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to produce a shell of greater permeability than a shell of equal thickness as produced by reaction of the polyisocyanate with the principal amine alone.

6. (Withdrawn) The pesticidal material as set forth in claim 1 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to produce a shell of lesser permeability than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

7. (Withdrawn) The pesticidal material as set forth in claim 1 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce a shell of lesser permeability than a shell of equal thickness as produced by reaction of the polyisocyanate with the principal amine alone.

8. (Withdrawn) The pesticidal material as set forth in claim 1 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce a microcapsule wherein the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shell is greater than would be obtained by reaction of polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

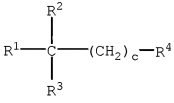
9. (Original) The pesticidal material as set forth in claim 1 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce a microcapsule wherein the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shell is less than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

10. (Original) The pesticidal material as set forth in claim 1 wherein the auxiliary amine reactant is selected from the group consisting of polyalkyleneamine and an epoxy-amine adduct.

11. (Original) The pesticidal material as set forth in claim 10 wherein the auxiliary amine is a polyalkyleneamine comprising a polyetheramine, the polyetheramine being prepared by reaction of an alkylene oxide with a polyalcohol and

subsequent amination of terminal hydroxyl groups of a product formed by said reaction.

12. (Original) The pesticidal material as set forth in claim 11 wherein the polyetheramine has the following formula:



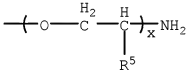
wherein:

c is a number having a value of 0 or 1;

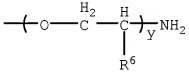
"R^1" is selected from the group consisting of hydrogen and $CH_3(CH_2)_d$-;

"d" is a number having a value from 0 to about 5;

"R^2" and "R^3" are

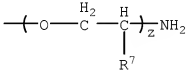


and



respectively;

"R^4" is selected from the group consisting of hydrogen and



wherein "R^5", "R^6", and "R^7" are independently selected from a group consisting of hydrogen, methyl, and ethyl; and,

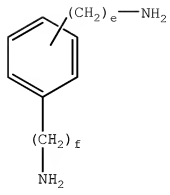
"x", "y", and "z" are numbers whose total ranges from about to 2 to about 40.

13. (Withdrawn) The pesticidal material as set forth in claim 10 wherein the auxiliary amine is an epoxy-amine adduct comprising a product of a reaction of an amine reactant selected from the group consisting of diethylenetriamine and ethylenediamine with an epoxy reactant selected from the group consisting of ethylene oxide, propylene oxide, styrene oxide, cyclohexane oxide, and diglycidyl ether of bisphenol A.

14. (Withdrawn) The pesticidal material as set forth in either of claims 6 or 7 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to produce a shell of greater crystallinity than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

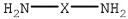
15. (Withdrawn) The pesticidal material as set forth in claim 1 wherein the auxiliary amine comprises a moiety selected from the group consisting of an aryl moiety and a cylcloalkyl moiety.

16. (Withdrawn) The pesticidal material as set forth in claim 1 wherein the auxiliary amine is selected from the group consisting of 4,4'-diaminodicyclohexyl methane, 1,4-Cyclohexanebis(methylamine), isophorone diamine, and a compound of the following formula:

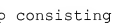
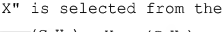


wherein "e" and "f" are integers with a values which independently range from about 1 to about 4.

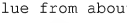
17. (Original) The pesticidal material as set forth in claim 1 wherein the principal amine is selected from the group consisting of epoxy-amine adducts and a diamine of the following structure:



wherein:

"X" is selected from the group consisting of  and  ;

"a" is an integer having a value from about 2 to about 6;

"Y" is selected from the group consisting of , , and  ;

"b" is an integer having a value between 0 and about 4 and "a" is as defined above; and,

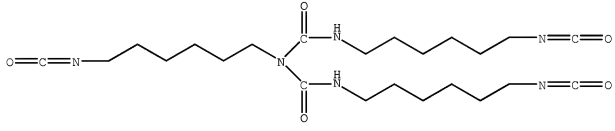
"Z" is selected from the group consisting of -NH-, -O-, and -S-.

18. (Original) The pesticidal material as set forth in claim 17 wherein the principal amine is selected from the group consisting of diethylenetriamine, triethylenetetramine, iminobispropylamine, bis(hexamethylene)triamine, epoxy-amine adducts, cystamine, triethylene glycol diamine, ethylene

diamine, propylene diamine, butylene diamine, pentylene diamine, and hexamethylene diamine.

19. (Original) The pesticidal material as set forth in claim 1 wherein the polyisocyanate is selected from the group consisting of a linear aliphatic polyisocyanate, a ring-containing aliphatic polyisocyanate, and an isocyanate comprising an aromatic moiety.

20. (Original) The pesticidal material as set forth in claim 1 wherein the polyisocyanate is selected from the group consisting of a polyisocyanate having a methylenediphenyl moiety and a biuret-containing adduct of hexamethylene-1,6-diisocyanate of the following structure:



21. (Original) The pesticidal material as set forth in claim 1 wherein the shell is substantially non-porous.

22. (Previously Presented) The pesticidal material as set forth in claim 1 wherein the shell and the core material each has a Hildebrand solubility parameter, and the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shell is greater than 0.5 Joule$^{1/2}$/cm$^{3/2}$ and less than about 5 Joule$^{1/2}$/cm$^{3/2}$.

23. (Original) The pesticidal material as set forth in claim 1 wherein the pesticide comprises an agricultural compound selected from the group consisting of a herbicide, a herbicide safener, and a fungicide.

24. (Previously Presented) A pesticidal material comprising a substantially water-immiscible core material, the core material comprising a pesticide, wherein the pesticide comprises an acetanilide, and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

25. (Previously Presented) A pesticidal material comprising a substantially water-immiscible core material, the core material comprising a herbicide, wherein the herbicide is selected from the group consisting of acetochlor, alachlor, and triallate, and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the

predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

26. (Previously Presented) The pesticidal material as set forth in claim 23 wherein the pesticide comprises a herbicide and a safener.

27. (Original) The pesticidal material as set forth in claim 1 wherein the core material further comprises a diluent.

28. (Original) The pesticidal material as set forth in claim 27 wherein the core material further comprises a diluent which is selected such that the core material has a Hildebrand solubility parameter which is greater than a Hildebrand solubility parameter of an otherwise identical core material which is substantially free of the diluent.

29. (Original) The pesticidal material as set forth in claim 27 wherein the core material further comprises a diluent which is selected such that the core material has a Hildebrand solubility parameter which is less than a Hildebrand solubility

parameter of an otherwise identical core material which is substantially free of the diluent.

30. (Original) The pesticidal material as set forth in claim 1 wherein the ratio of the weight of the shell to the weight of the core material is less than about 33%.

31. (Previously Presented) The pesticidal material as set forth in claim 1 comprising a microcapsule comprising said core material encapsulated within said shell, said microcapsule having a mass to volume ratio between about 1.1 g/cm^3 and about 1.5 g/cm^3.

32. (Previously Presented) An agricultural formulation comprising a dispersion of microcapsules in an aqueous phase, said microcapsules comprising a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population

of microcapsules immersed in water at a temperature of about 30°C.

33. (Original) A agricultural formulation according to claim 32 wherein neither the primary amine nor the auxiliary amine is a hydrolysis product of the polyisocyanate.

34. (Original) The agricultural formulation as set forth in claim 32 wherein said other monomers comprise the principal amine and the auxiliary amine in a ratio effective to provide a predetermined permeability of the shell.

35. (Original) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to produce shells of greater permeability than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

36. (Original) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce shells of greater permeability than a shell of equal thickness as produced by reaction of the polyisocyanate with the principal amine alone.

37. (Withdrawn) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to

produce shells of lesser permeability than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

38. (Withdrawn) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce shells of lesser permeability than a shell of equal thickness as produced by reaction of the polyisocyanate with the principal amine alone.

39. (Withdrawn) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce microcapsules wherein the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shells is greater than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

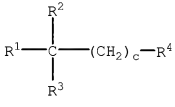
40. (Original) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine compound is effective, on reaction of the polyisocyanate with said other monomers, to produce microcapsules wherein the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shells is less than would be obtained by reaction of the polyisocyanate in the

absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

41. (Original) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine is selected from the group consisting of polyalkyleneamine and an epoxy-amine adduct.

42. (Original) The agricultural formulation as set forth in claim 41 wherein the auxiliary amine is a polyalkyleneamine comprising a polyetheramine, the polyetheramine being prepared by reaction of an alkylene oxide with a polyalcohol and subsequent amination of terminal hydroxyl groups of a product formed by said reaction.

43. (Original) The agricultural formulation as set forth in claim 42 wherein the polyetheramine has the following formula:



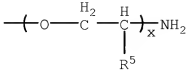
wherein:

c is a number having a value of 0 or 1;

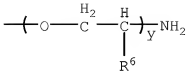
"R^1" is selected from the group consisting of hydrogen and $CH_3(CH_2)_d$-;

"d" is a number having a value from 0 to about 5;

"R^2" and "R^3" are

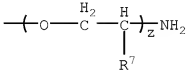


and



respectively;

"R^4" is selected from the group consisting of hydrogen and



wherein "R^5", "R^6", and "R^7" are independently selected from a group consisting of hydrogen, methyl, and ethyl; and,

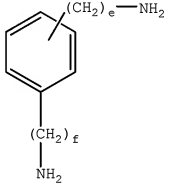
"x", "y", and "z" are numbers whose total ranges from about to 2 to about 40.

44. (Withdrawn) The agricultural formulation as set forth in claim 41 wherein the auxiliary amine is an epoxy-amine adduct comprising a product of a reaction of an amine reactant selected from the group consisting of diethylenetriamine and ethylenediamine with an epoxy reactant selected from the group consisting of ethylene oxide, propylene oxide, styrene oxide, cyclohexane oxide, and diglycidyl ether of bisphenol A.

45. (Withdrawn) The agricultural formulation as set forth in either of claims 37 or 38 wherein the auxiliary amine is effective, on reaction of the polyisocyanate with said other monomers, to produce shells of greater crystallinity than would be obtained by reaction of the polyisocyanate in the absence of the auxiliary amine in a reference polymerization system of composition otherwise identical to that of said shell-forming polymerization system.

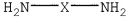
46. (Withdrawn) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine comprises a moiety selected from the group consisting of an aryl moiety and a cylcloalkyl moiety.

47. (Withdrawn) The agricultural formulation as set forth in claim 32 wherein the auxiliary amine is selected from the group consisting of 4,4'-diaminodicyclohexyl methane, 1,4-Cyclohexanebis(methylamine), isophorone diamine, and a compound of the following formula:

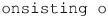
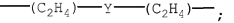


wherein "e" and "f" are integers with a values which independently range from about 1 to about 4.

48. (Original) The agricultural formulation as set forth in claim 32 wherein the principal amine is selected from the group consisting of epoxy-amine adducts and a diamine of the following structure:



wherein:

"X" is selected from the group consisting of  and  ;

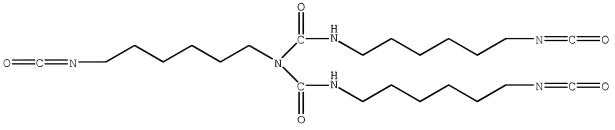
"a" is an integer having a value from about 2 to about 6;

"Y" is selected from the group consisting of ——S——S——, ——$(CH_2)_b$—Z——$(CH_2)_b$——, and ——Z——$(CH_2)_a$—Z——;
"b" is an integer having a value between 0 and about 4 and "a" is as defined above; and,
"Z" is selected from the group consisting of -NH-, -O-, and -S-.

49. (Original) The agricultural formulation as set forth in claim 48 wherein the principal amine is selected from the group consisting of diethylenetriamine, triethylenetetramine, iminobispropylamine, bis(hexamethylene)triamine, epoxy-amine adducts, cystamine, triethylene glycol diamine, ethylene diamine, propylene diamine, butylene diamine, pentylene diamine, and hexamethylene diamine.

50. (Original) The agricultural formulation as set forth in claim 32 wherein the polyisocyanate is selected from the group consisting of a linear aliphatic polyisocyanate, a ring-containing aliphatic polyisocyanate, and an isocyanate comprising an aromatic moiety.

51. (Original) The agricultural formulation as set forth in claim 32 wherein the polyisocyanate is selected from the group consisting of a polyisocyanate having a methylenediphenyl moiety and a biuret-containing adduct of hexamethylene-1,6-diisocyanate of the following structure:



52. (Original) The agricultural formulation as set forth in claim 32 wherein the shells of the microcapsules are substantially non-porous.

53. (Previously Presented) The agricultural formulation as set forth in claim 32 wherein the shell and the core material each has a Hildebrand solubility parameter, and the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shell is greater than 0.5 $Joule^{1/2}/cm^{3/2}$ and less than about 5 $Joule^{1/2}/cm^{3/2}$.

54. (Original) The agricultural formulation as set forth in claim 32 wherein the pesticide comprises an agricultural compound selected from the group consisting of a herbicide, a herbicide safener, and a fungicide.

55. (Previously Presented) An agricultural formulation comprising a dispersion of microcapsules in an aqueous phase, a microcapsule comprising a substantially water-immiscible core material, the core material comprising a pesticide, wherein the pesticide comprises an acetanilide, and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further

wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

56. (Previously Presented) An agricultural formulation comprising a dispersion of microcapsules in an aqueous phase, a microcapsule comprising a substantially water-immiscible core material, the core material comprising a pesticide, wherein the herbicide is selected from the group consisting of acetochlor, alachlor, and triallate, and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

57. (Previously Presented) The agricultural formulation as set forth in claim 54 wherein the pesticide comprises a herbicide and a safener.

58. (Original) The agricultural formulation as set forth in claim 32 wherein the core material further comprises a diluent.

59. (Original) The agricultural formulation as set forth in claim 58 wherein the core material further comprises a diluent which is selected such that the core material has a Hildebrand solubility parameter which is greater than a Hildebrand solubility parameter of an otherwise identical core material which is substantially free of the diluent.

60. (Original) The agricultural formulation as set forth in claim 58 wherein the core material further comprises a diluent which is selected such that the core material has a Hildebrand solubility parameter which is less than a Hildebrand solubility parameter of an otherwise identical core material which is substantially free of the diluent.

61. (Original) The agricultural formulation as set forth in claim 32 wherein the ratio of the weight of the shell to the weight of the core material for a microcapsule is less than about 33%.

62. (Previously Presented) The agricultural formulation as set forth in claim 32 wherein said microcapsules have a mass to volume ratio between about 1.1 g/cm^3 and about 1.5 g/cm^3.

63. (Previously Presented) The agricultural formulation as set forth in claim 32 wherein the dispersion has a viscosity of from about 100 centipoise to about 300 centipoise.

64. (Original) The agricultural formulation as set forth in claim 32 wherein the microcapsules have a volume-weighted median diameter between about 2 microns and about 8 microns wherein the volume-weighted median diameter is reported by a particle size analyzer based on particle light diffraction of laser light having about a 750 mm wavelength.

65. (Original) The agricultural formulation as set forth in claim 32 wherein the microcapsules have a volumetric diameter distribution such that at least about 90% of the microcapsules on a volumetric basis have a diameter of less than about 60 microns, wherein the volumetric diameter distribution is reported by a particle size analyzer based on particle light diffraction of laser light having about a 750 mm wavelength.

66. (Original) The agricultural formulation as set forth in claim 32 comprising less than about 65 weight percent microcapsules.

67. (Original) The agricultural formulation as set forth in claim 32 further comprising an additive selected from the group consisting of a thickener, a dispersant, an antifreeze agent, a preservative, an aqueous phase density increaser, a pH buffer, an anti-packing agent, and an anti-foam agent.

68. (Original) The agricultural formulation as set forth in claim 32 wherein the microcapsules have a weight average mass to volume ratio within about 0.2 g/cm^3 of the aqueous phase density.

69. (Original) A method for plant growth control comprising the step of applying an agricultural formulation as set forth in claim 32 to an agricultural field.

70. - 93. (Canceled)